

FIGURE 1

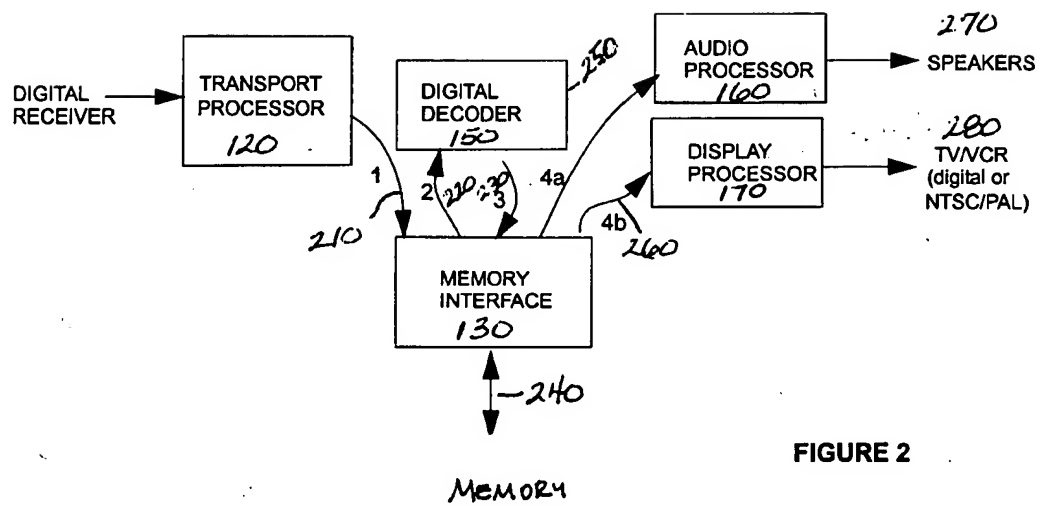


FIGURE 2

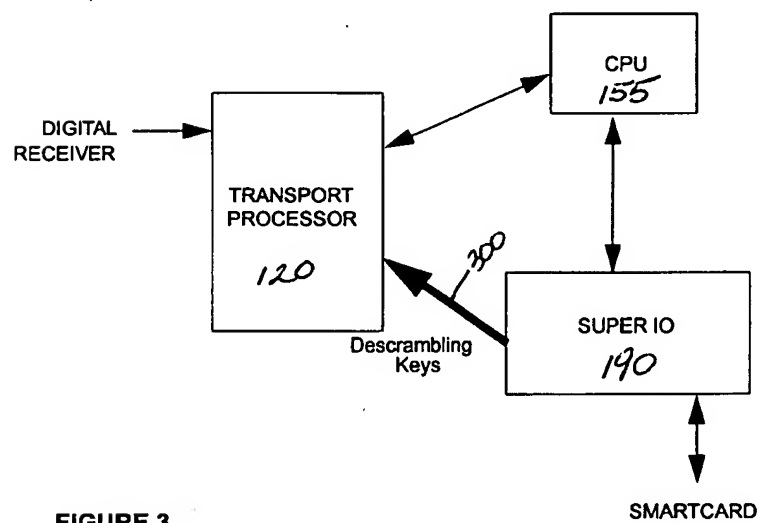


FIGURE 3

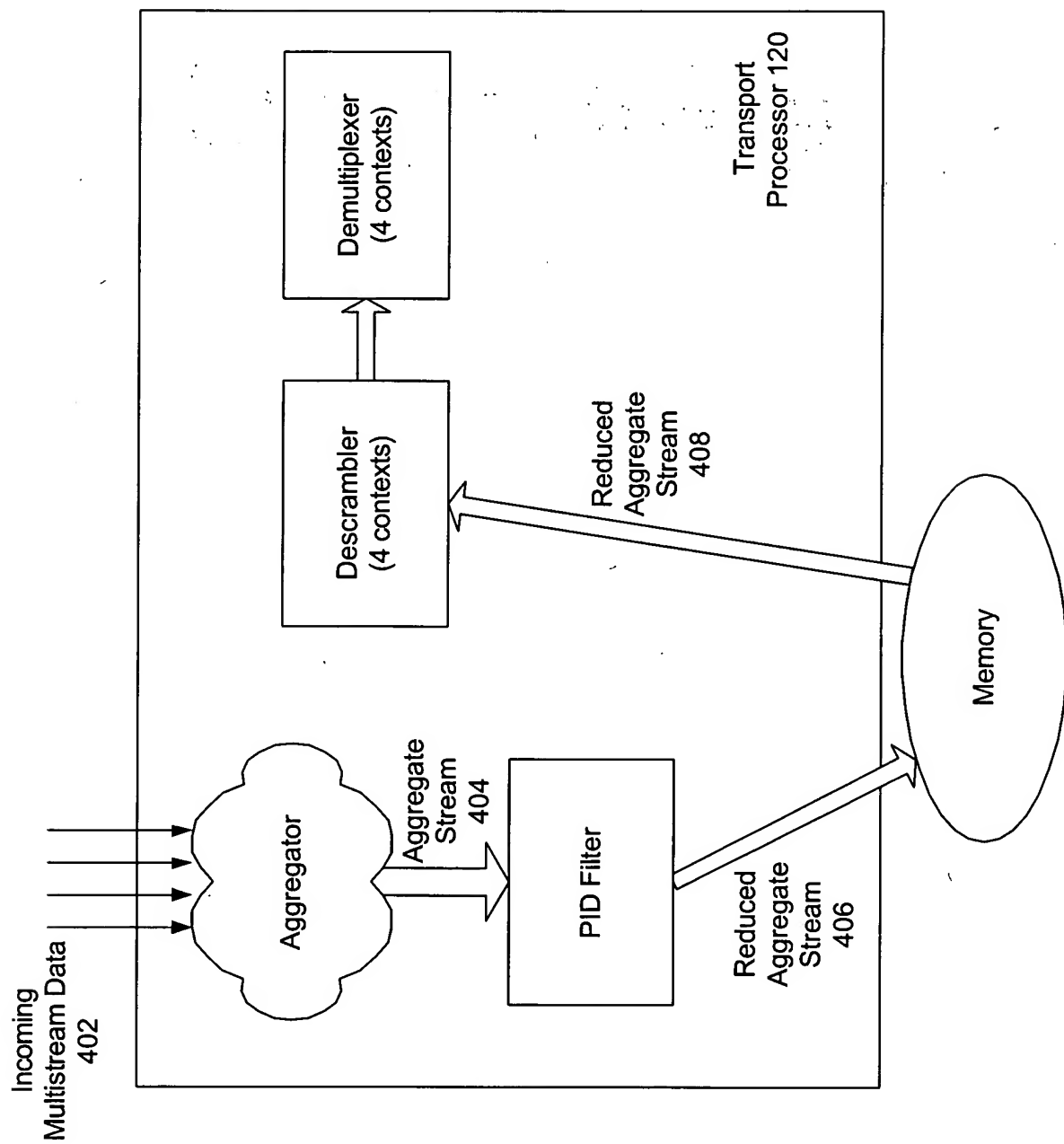
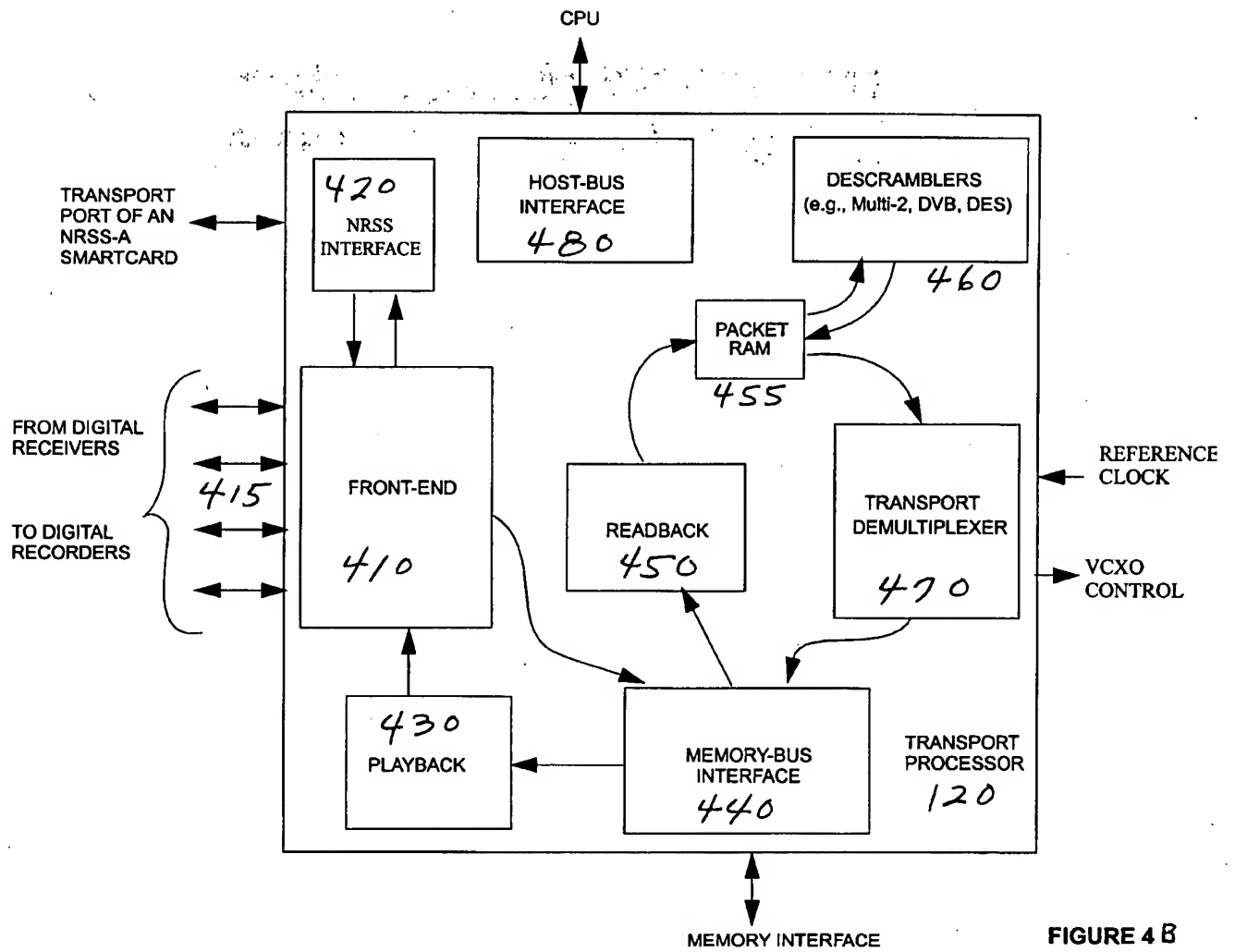


Fig. 4A



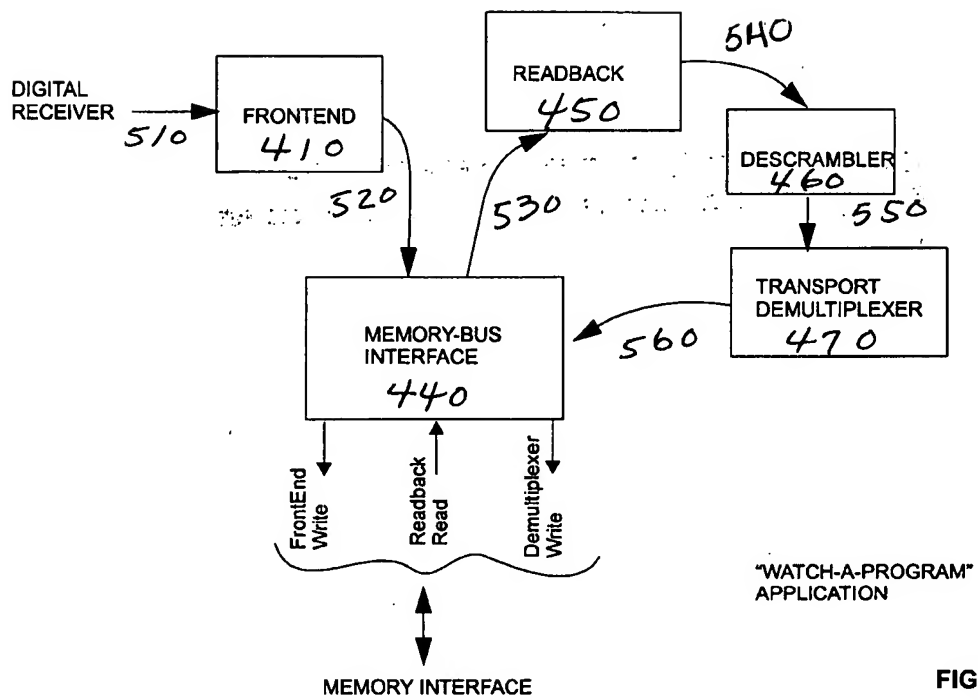


FIGURE 5

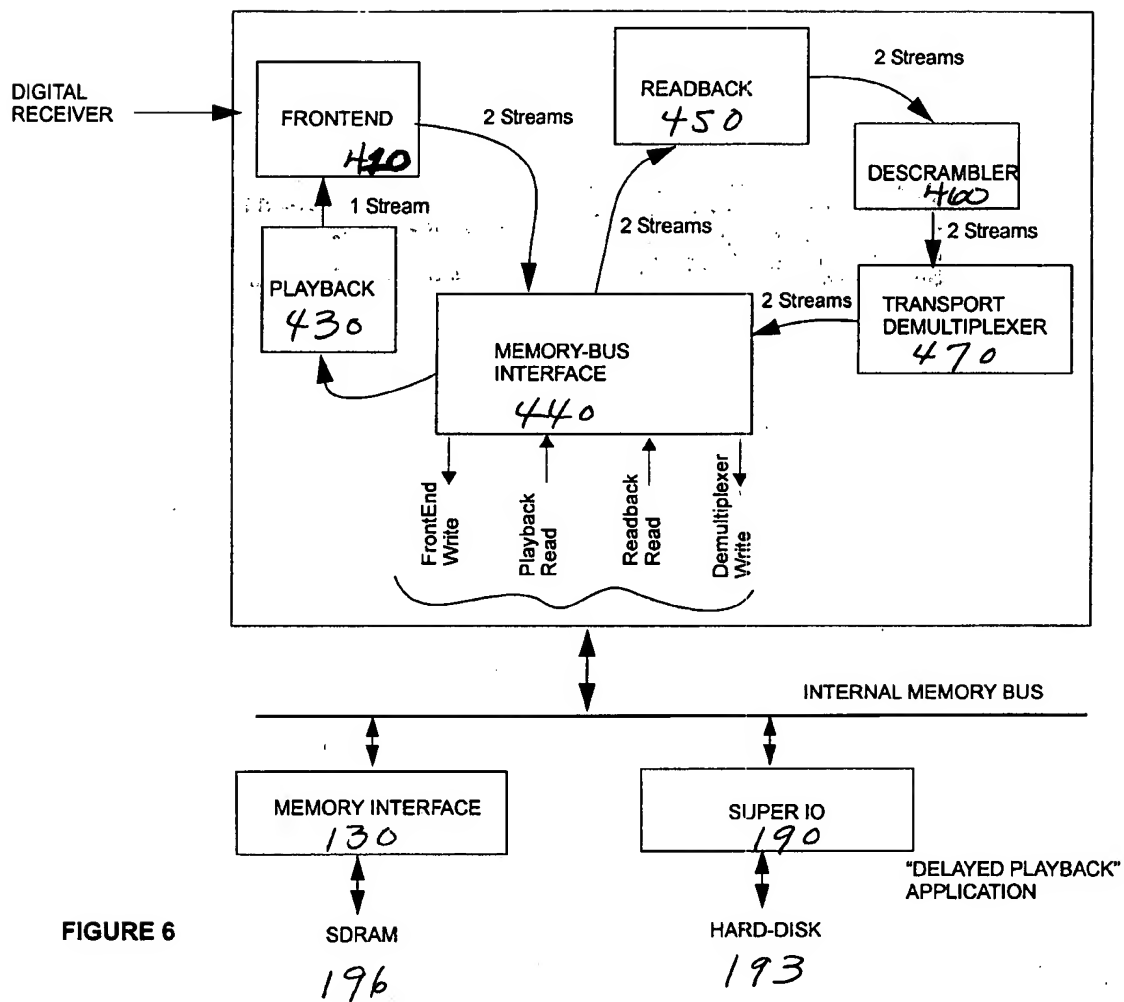


FIGURE 6

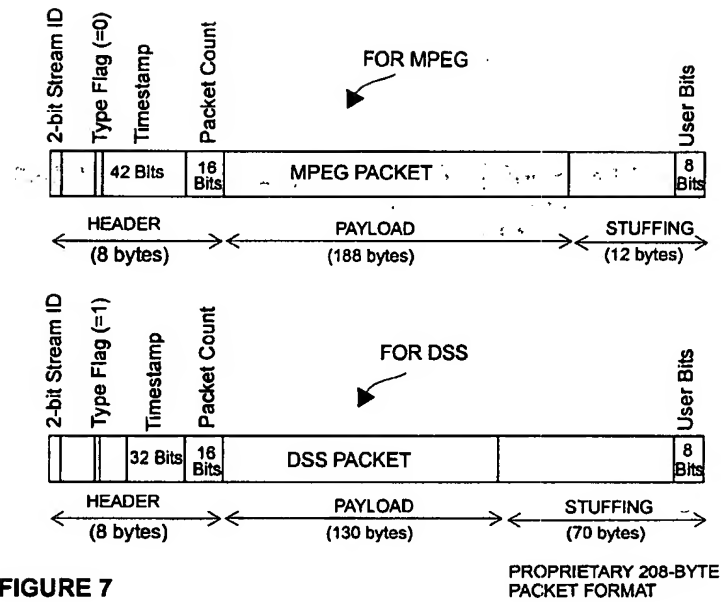


FIGURE 7

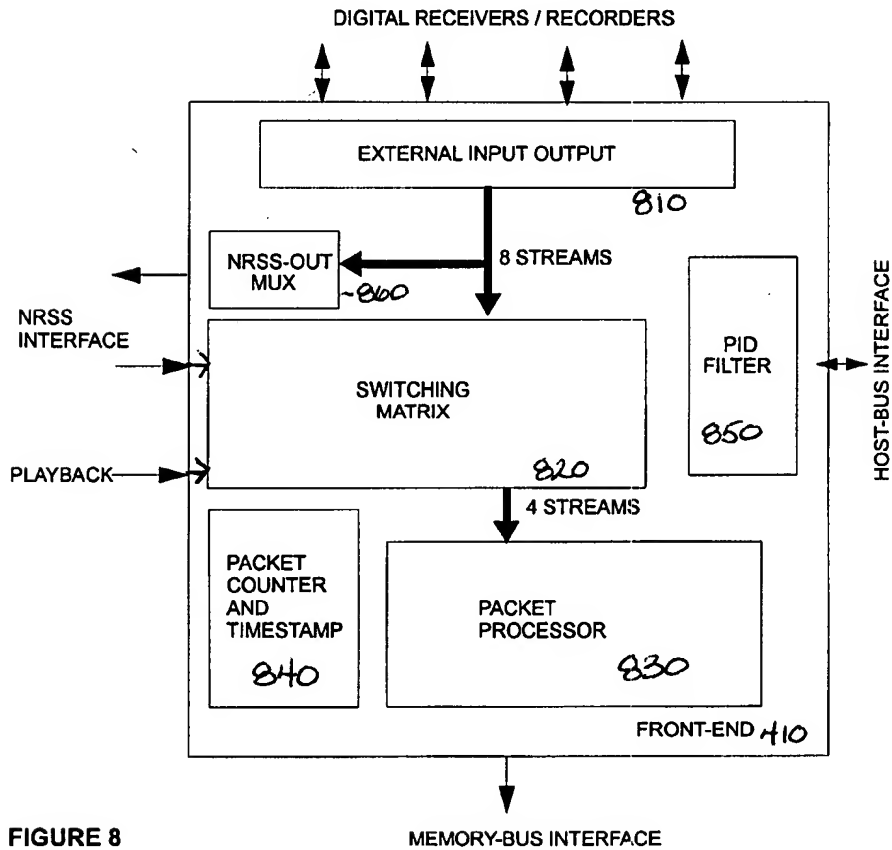


FIGURE 8

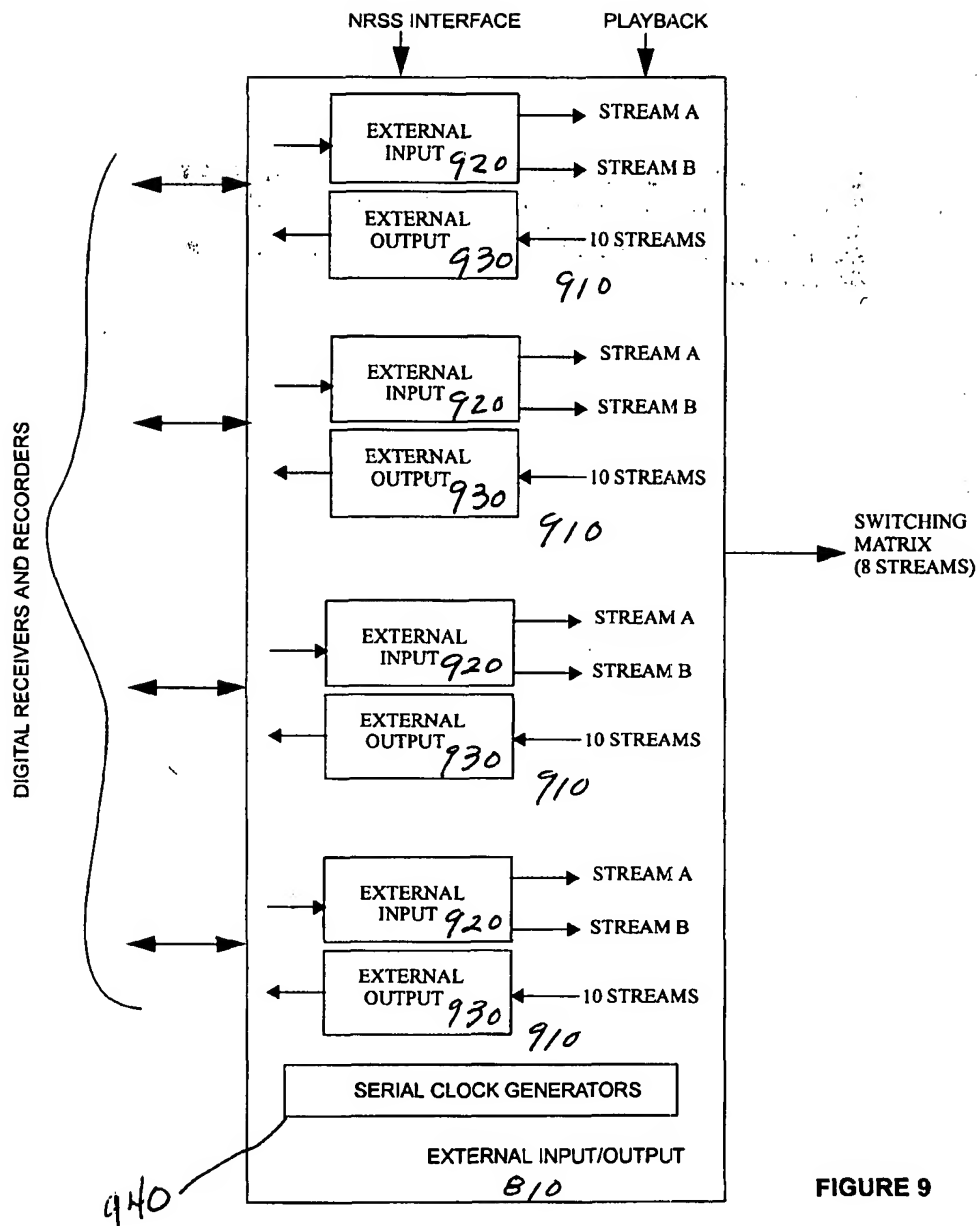
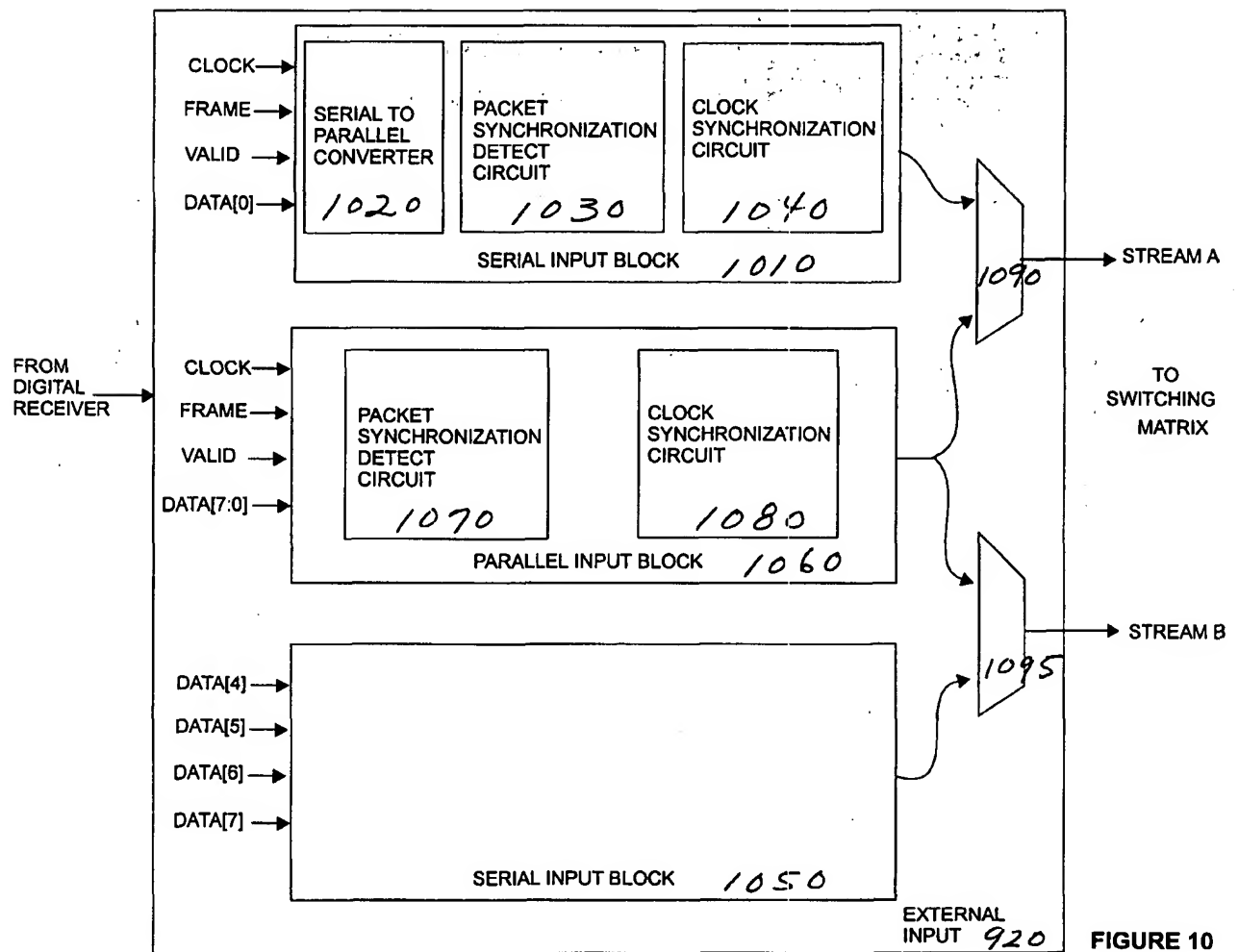


FIGURE 9





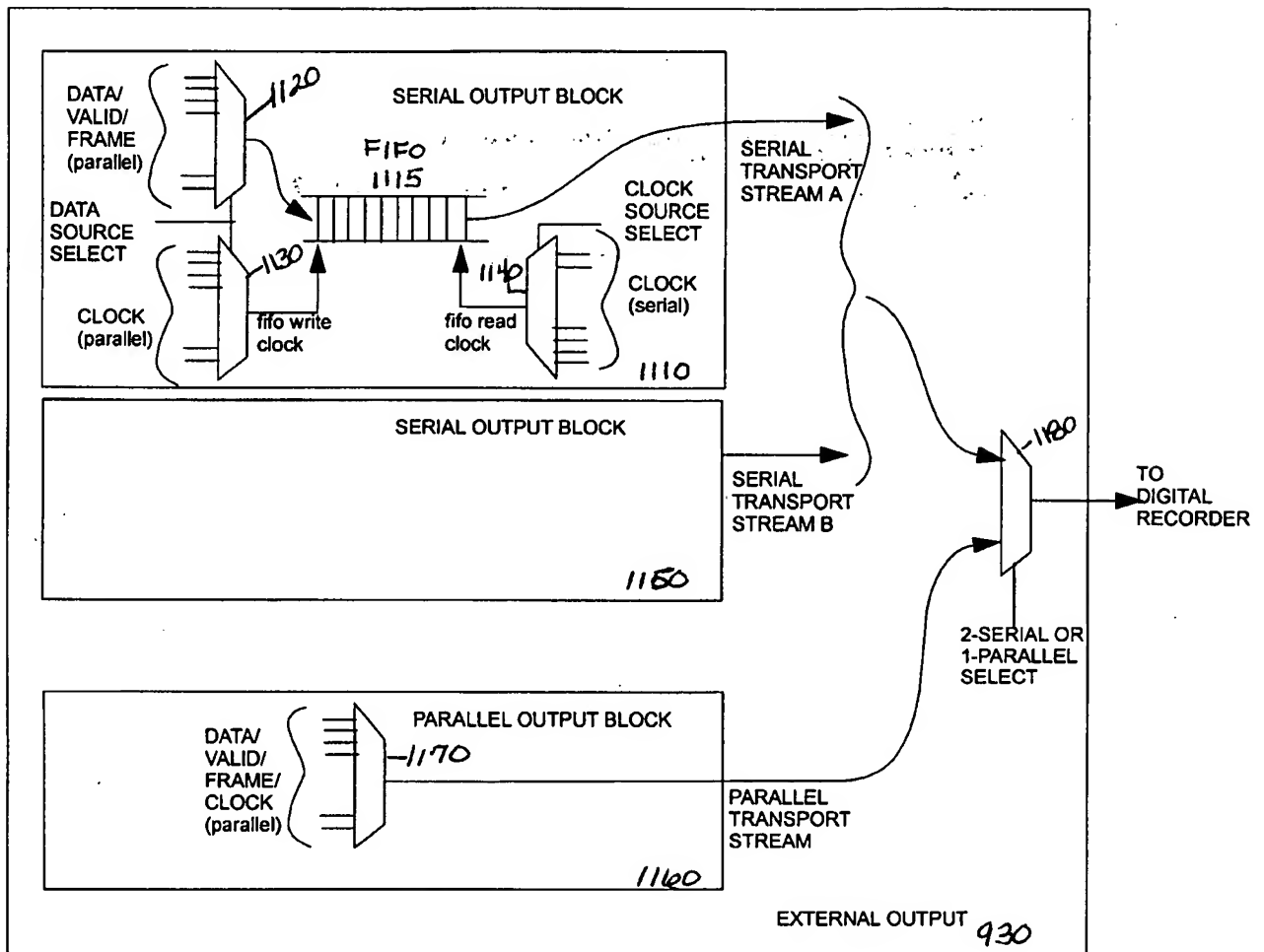


FIGURE 11

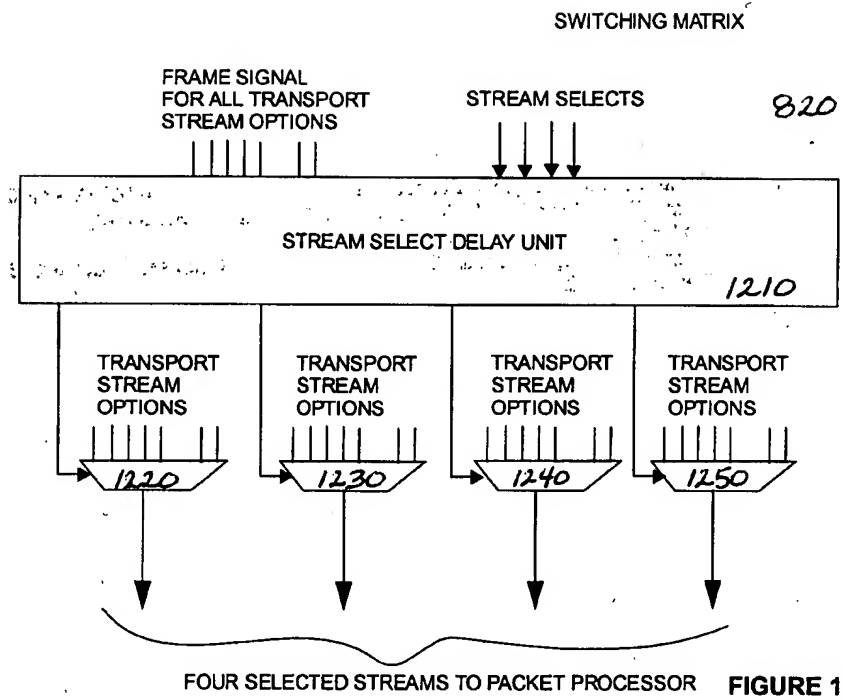


FIGURE 12A

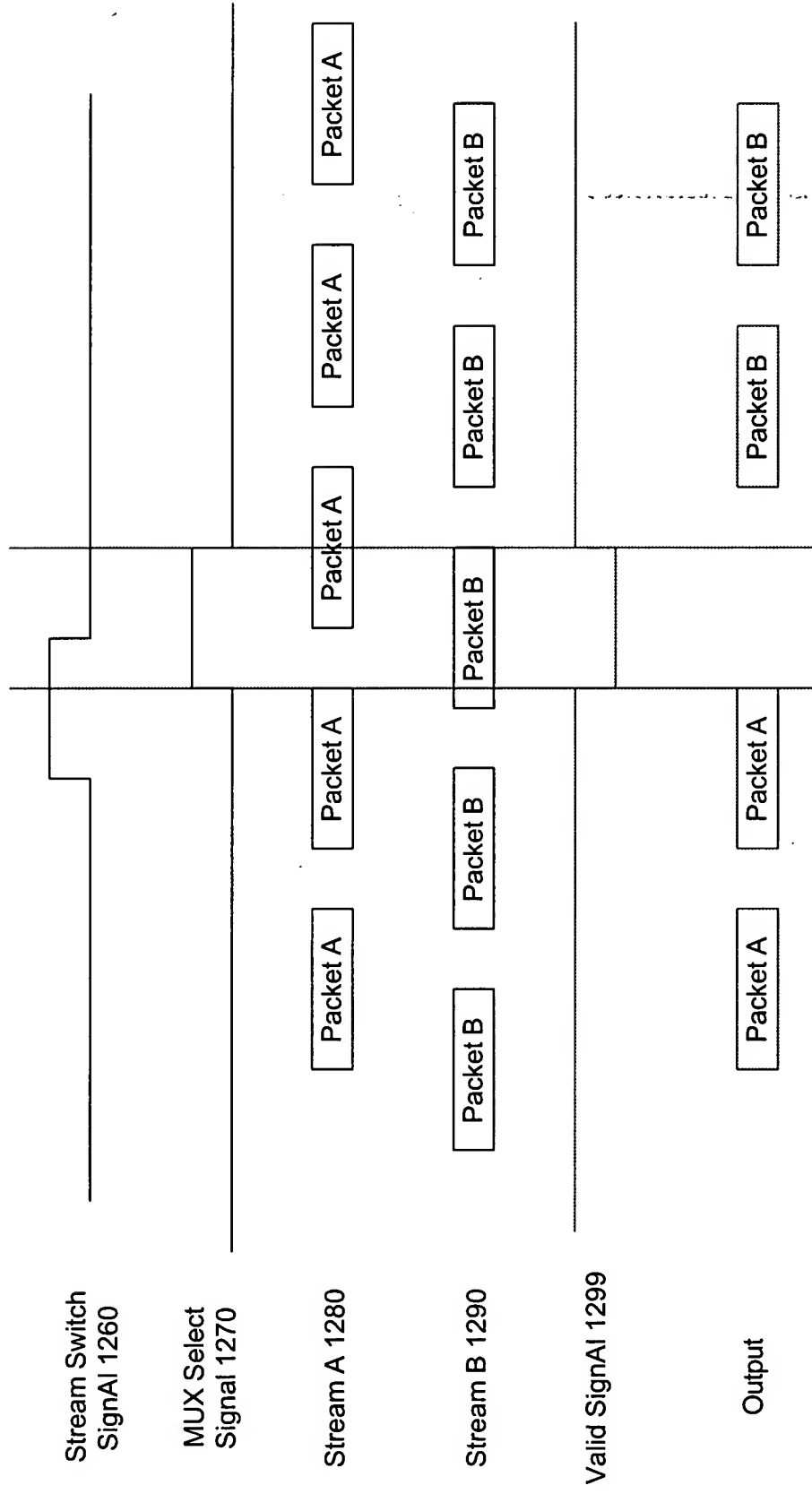


Fig. 12B

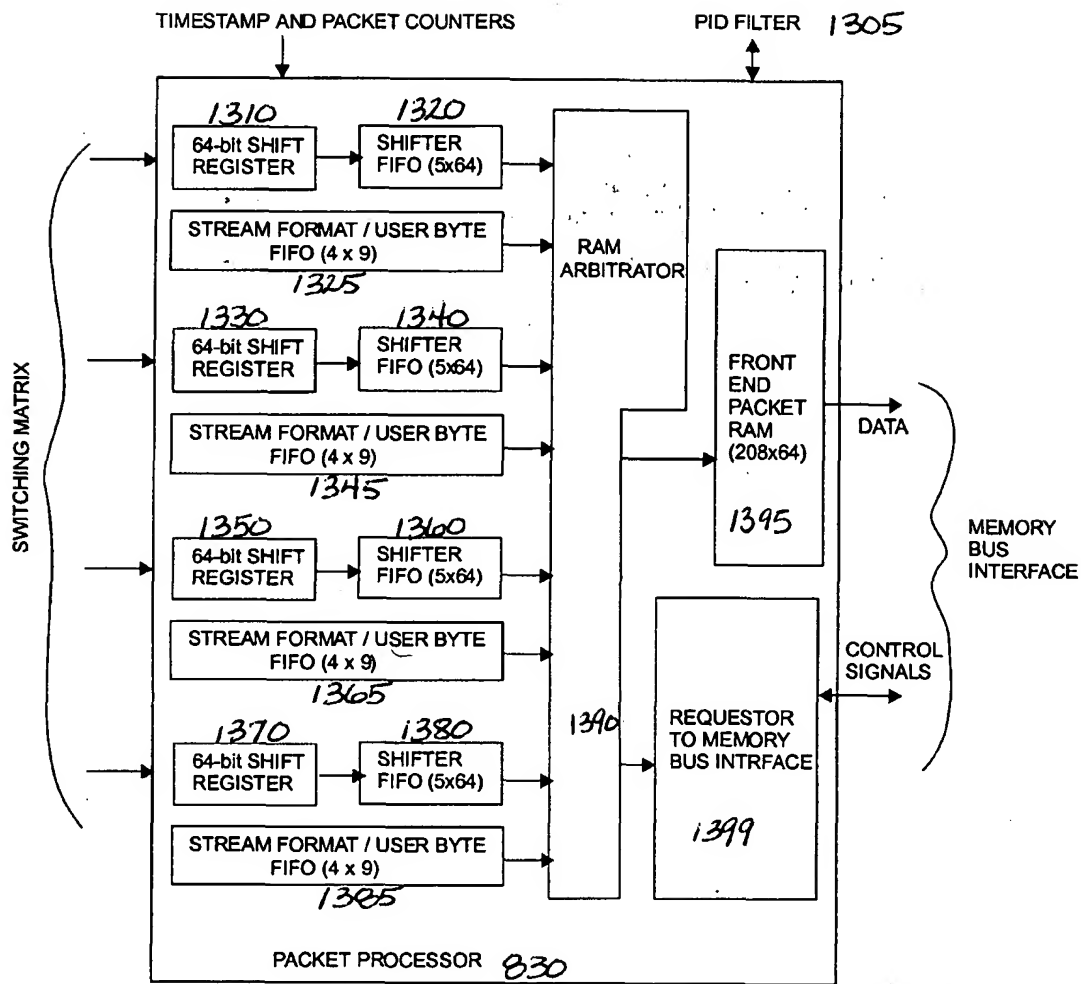
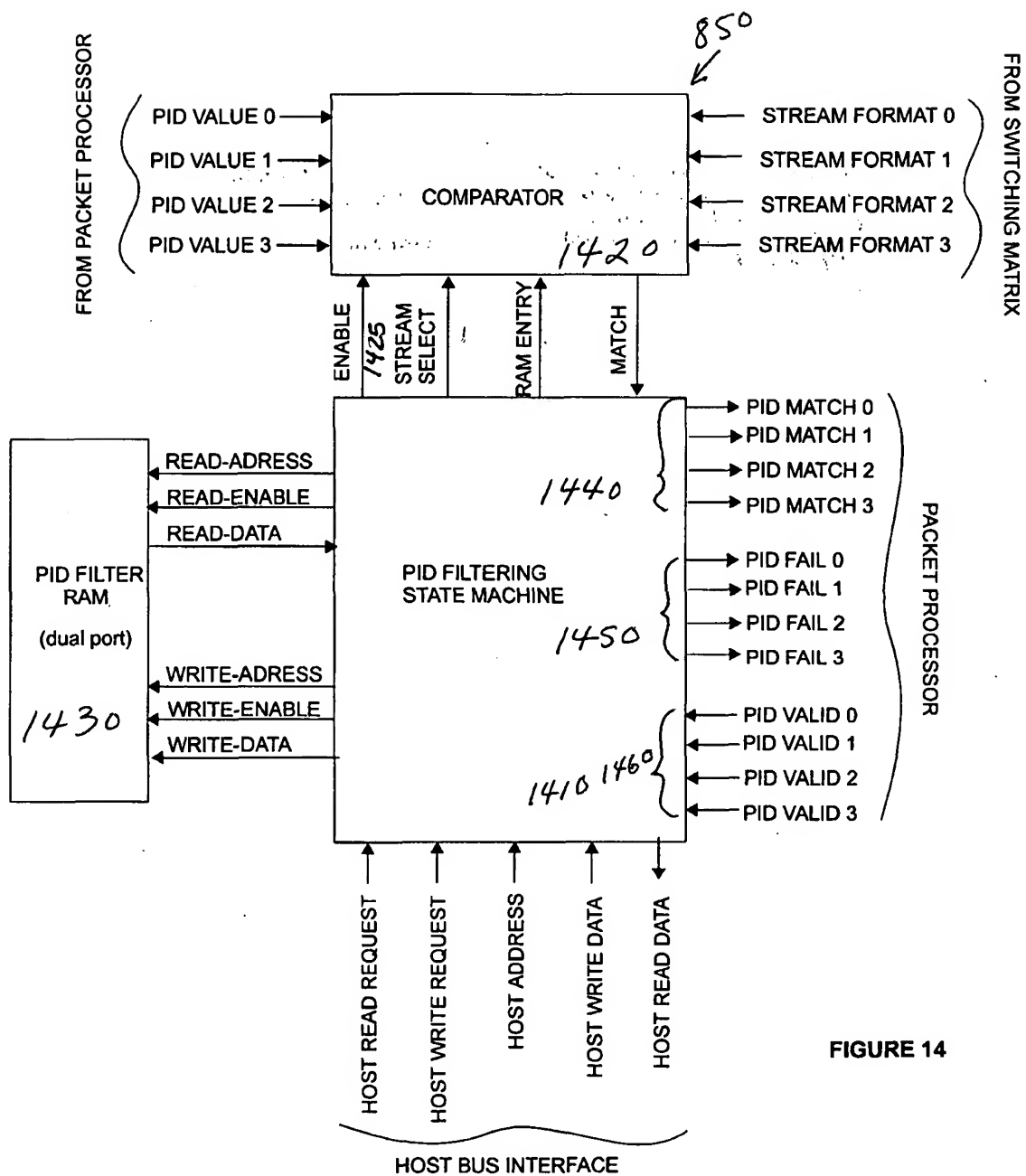


FIGURE 13



### FULL TRANSPORT: PLAYBACK RUNNING AT CONSTANT KNOWN RATE

15/0

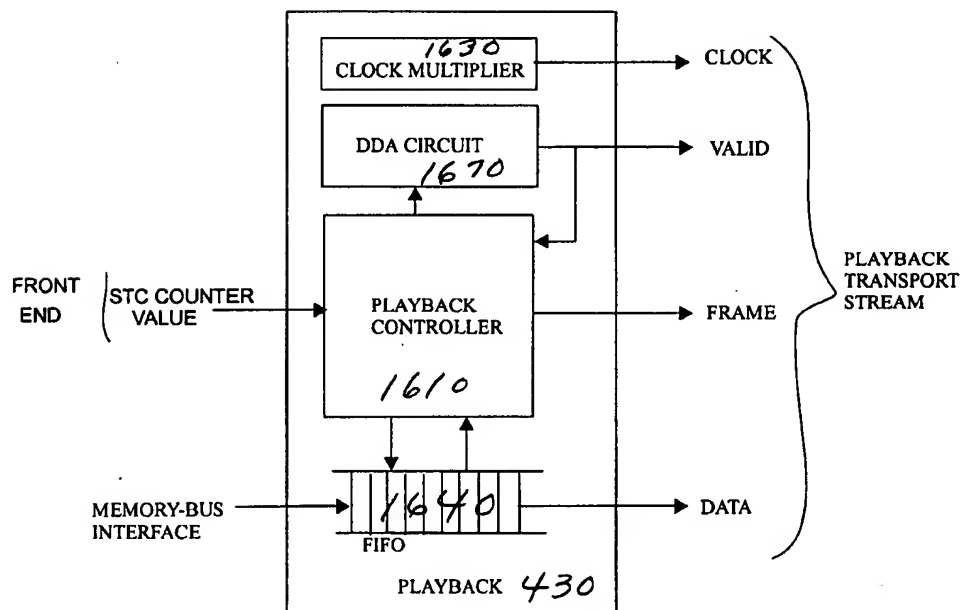
000 . 0 000    00 0 0 000 0    00 00 00    0 0 0000    .. 00 00    0000 000 0 0 0 0

1520

**■00000000 00000 ■000000000 ■000 0000 ■00000000 00**

1530

■ = CHUNK LEAD PACKET  
(typically a PCR Packet)

**FIGURE 15**

**FIGURE 16**

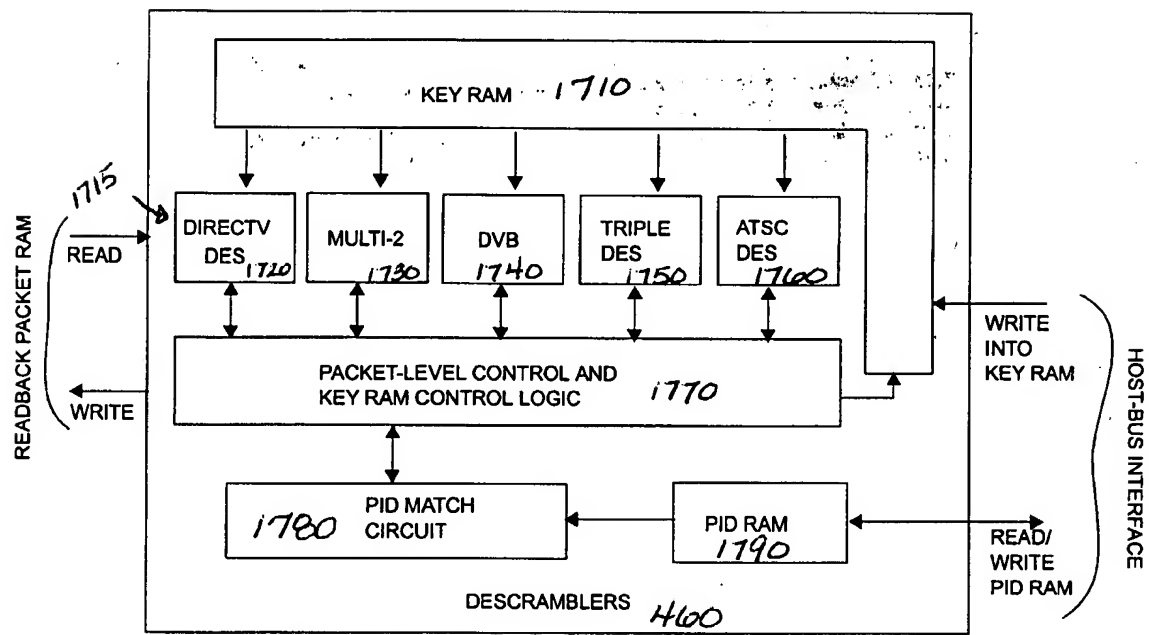


FIGURE 17



### Throughput of the Descrambling Algorithms

<u>Descrambling Algorithm</u>	<u>#cycles per 8 bytes</u>	<u>Thruput 108 MHz</u> (in Mbps)	<u>Thruput 150 MHz</u> (in Mbps)	<u>Thruput 180 MHz</u> (in Mbps)
Multi-2	36	192	267	320
DSS DES-ECB	28	247	343	411
DVB	65	106	148	177
MPEG DES-ECB	28	247	343	411
Triple-DES CBC	72	96	133	160

### Number of Streams That Can be Descrambled For Different Broadcasts

<u>Broadcast Type</u>	<u>Algorithm Required</u>	<u>Strm Rate</u> (Mbps)	<u>#Strms Descr</u> 108 MHz	<u>#Strms Descr</u> 150 MHz	<u>#Strms Descr</u> 180 MHz
Europe DVB*	DVB	60			
Terrestrial US	Triple DES	19.4	4.9	6.9	8.2
DirectTV US	DSS DES	38.8	6.4	8.8	8.8
DirectTV Japan**	DVB	40			4.4
ARIB BS4 Japan	Multi-2	28.04	6.8	9.5	9.5
ATSC Cable**	Triple DES	38.8			4.1
Echostar US	DVB	24	4.4	6.2	7.4

\* 60 Mbps contains close to 10 programs, out of which we would descramble 2 or 3. So the effective rate is more like 20 Mbps.

\*\* Likewise for these cases as well, a stream is packed with numerous programs, and we would descramble only a few.

### Number of Streams That Can be Descrambled For Different Broadcasts

<u>Descr Algorithm</u>	<u>#StdDefnPqms Descr</u>			<u>#HlDefnPqms Descr</u>		
	108 MHz	150 MHz	180 MHz	108 MHz	150 MHz	180 MHz
Multi-2	32	44	53	10	14	17
DSS DES	41	57	69	13	18	21
DVB	18	25	30	6	8	9
MPEG DES	41	57	69	13	18	21
Triple-DES	16	22	27	5	7	8

Note: For this table we assume SD-Rate=6Mbps/program

HD-Rate=19.2Mbps/program

FIGURE 18

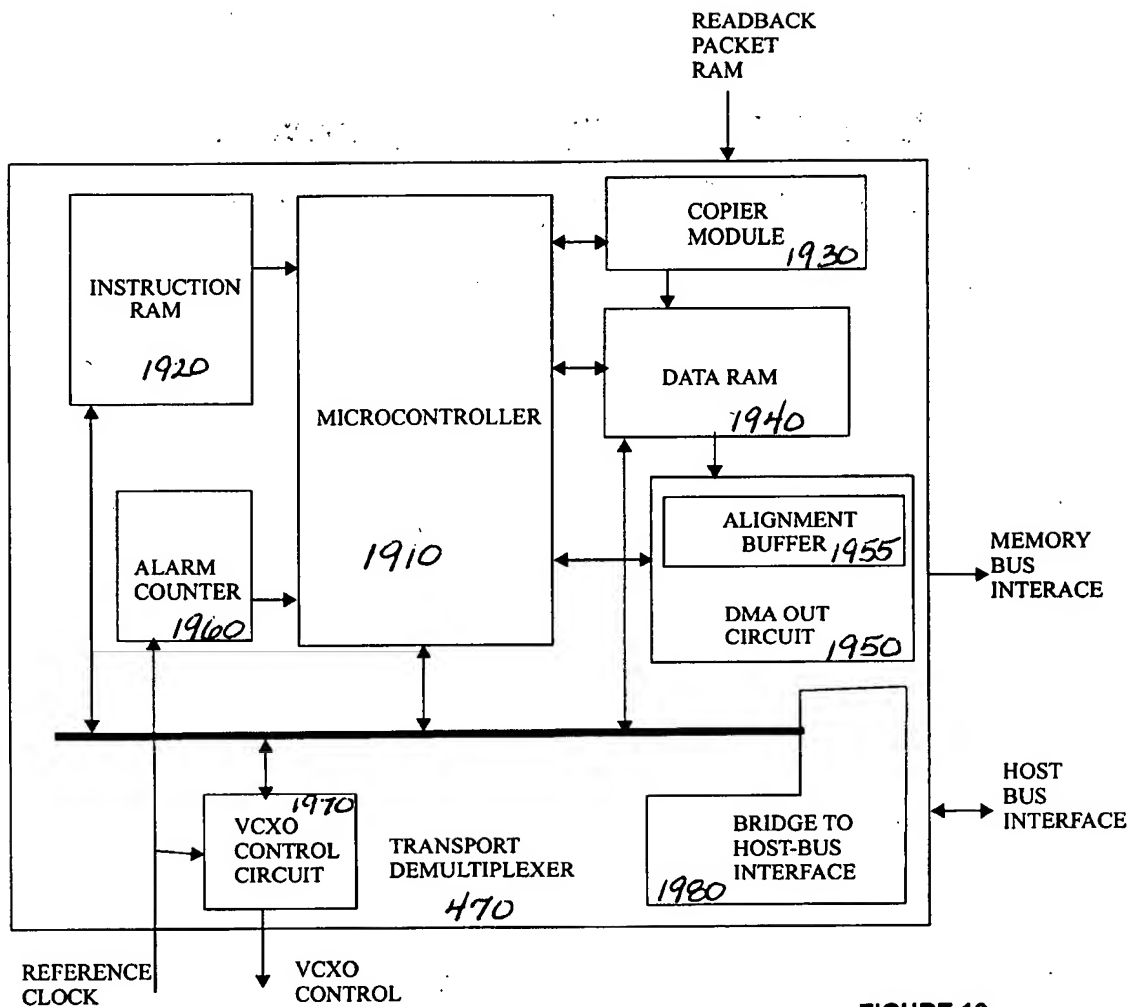


FIGURE 19

